

AMENDMENTS TO THE CLAIMS

Claims 1, 2 and 14 are currently being amended, and new claims 25-28 are being added. No claims are currently being canceled. All pending claims are reproduced below, including those that remain unchanged.

1. (Currently Amended) A system comprising:
a digital amplifier controller;
an amplifier output stage coupled to the controller, and configured to receive
audio signals from the controller;
one or more sensors coupled to the output stage; and
one or more low-pass filters coupled to the one or more sensors and configured to
receive sensor signals from the one or more sensors;
wherein the low-pass filters are configured to filter the sensor signals and to
provide the filtered sensor signals to the controller; ~~and~~
wherein the amplifier output stage includes at least two transistors;
wherein the controller is configured to ~~provide a~~ select one of a plurality of
different programmable responses based on the filtered sensor signals; ~~and~~
wherein one or more of the plurality of different programmable responses does
not cause a turning off of any of the transistors of the amplifier output
stage.
2. (Currently Amended) The system of claim 1,
~~wherein the controller comprises a pulse width modulation (PWM) controller and~~
~~the output stage comprises a PWM output stage;~~

~~wherein the system further comprises one or more comparators coupled to receive analog sensor signals from corresponding ones of the sensors and configured to generate binary sensor signal which are provided to corresponding ones of the low-pass filters;~~

~~wherein each low-pass filter comprises an accumulator configured to not assert the filtered sensor signal when a value in the accumulator is below a programmable threshold and to assert the filtered sensor signal when the value in the accumulator is above the threshold; and~~

~~wherein the one or more sensors comprise at least one current sensor and at least one temperature sensor[[, and]];~~

~~wherein the controller is configured to detect over-current conditions in the output stage based on filtered sensor signals from the at least one current sensor; and~~

~~wherein the controller is configured to detect over-temperature conditions in the output stage based on filtered sensor signals from the at least one temperature sensor; and~~

~~wherein the programmable response to the filtered sensor signals is selected from the a group of responses that includes compressing at least a portion of the audio signals without causing a turning off of a transistor of the output stage.~~

3. (Original) The system of claim 1, wherein the controller comprises a pulse width modulation (PWM) controller and the output stage comprises a PWM output stage.

4. (Original) The system of claim 3, wherein the one or more sensors comprise at least one current sensor, wherein the controller is configured to detect shoot-through current and to responsively adjust delays between a high-side signal and a low-side signal to minimize the shoot-through current.
5. (Original) The system of claim 1, further comprising one or more comparators, wherein each comparator is coupled to receive an analog sensor signal from a corresponding one of the sensors and to generate a binary sensor signal which is provided to a corresponding one of the low-pass filters.
6. (Original) The system of claim 5, wherein the one or more sensors comprise at east one current sensor.
7. (Original) The system of claim 5, wherein the one or more sensors comprise at east one temperature sensor.
8. (Previously presented) The system of claim 1, wherein the low-pass filters comprise accumulators configured to increment when the sensor output signal is asserted and to decrement when the sensor output signal is not asserted.
9. (Original) The system of claim 8, wherein the filtered sensor signal corresponding to each accumulator is not asserted when a value in the accumulator is

below a threshold and is asserted when the value in the accumulator is above the threshold.

10. (Original) The system of claim 9, wherein the threshold is programmable.

11. (Previously presented) The system of claim 1, wherein the controller is configured to receive filtered sensor signals from multiple sensors and to provide responses based on each of the filtered sensor signals.

12. (Original) The system of claim 11, wherein the multiple sensors comprise at least one current sensor and at least one temperature sensor, and wherein the controller is configured to detect over-current and over-temperature conditions in the output stage.

13. (Previously presented) The system of claim 1, wherein the programmable response based on the filtered sensor signals comprises compressing at least a portion of the audio signals.

14. (Currently Amended) A method comprising:
sensing a condition of an audio amplifier output stage, wherein the amplifier output stage includes at least two transistors;
providing a sensor output signal corresponding to the sensed condition;
low-pass filtering the sensor output signal to produce a filtered sensor signal;
providing the filtered sensor signal to an audio amplifier controller; and

selecting one of a plurality of different ~~providing a~~ programmable responses based on the filtered sensor signal, wherein one or more of the plurality of different programmable responses does not cause a turning off of any of the transistors of the amplifier output stage.

15. (Original) The method of claim 14, wherein the audio amplifier output stage comprises a pulse width modulated (PWM) output stage and wherein sensing the condition of the output stage comprises detecting a current through a transistor of the output stage.

16. (Original) The method of claim 15, further comprising detecting a shoot-through condition in the output stage.

17. (Original) The method of claim 16, further comprising adjusting relative delays between a high-side signal and a low-side signal input to the output stage to minimize shoot-through.

18. (Original) The method of claim 14, wherein the audio amplifier output stage comprises a pulse width modulated (PWM) output stage and wherein sensing the condition of the output stage comprises detecting a temperature of a transistor of the output stage.

19. (Original) The method of claim 14, wherein the audio amplifier output stage comprises a pulse width modulated (PWM) output stage and wherein sensing the condition of the output stage comprises detecting a temperature of a heat sink of the output stage.

20. (Original) The method of claim 14, wherein providing a sensor output signal corresponding to the sensed condition comprises sensing a voltage corresponding to the sensed condition, comparing the voltage to a reference value and generating a binary signal based upon the comparison.

21. (Previously presented) The method of claim 14, wherein low-pass filtering the sensor output signal comprises incrementing an accumulator when the sensor output signal is asserted and decrementing the accumulator when the sensor output signal is not asserted and generating a signal indicative of whether a value in the accumulator is above or below a threshold value associated with the accumulator.

22. (Original) The method of claim 21, further comprising modifying the threshold value associated with the accumulator.

23. (Original) The method of claim 14, further comprising processing filtered sensor signals corresponding to multiple sensors through common logic in the controller.

24. (Previously presented) The method of claim 14, wherein providing the programmable response based on the filtered sensor signal comprises compressing at least a portion of the audio signals.

25. (New) The system of claim 1, wherein:

the controller comprises a pulse width modulation (PWM) controller and the output stage comprises a PWM output stage;

the system further comprises one or more comparators coupled to receive analog sensor signals from corresponding ones of the sensors and configured to generate binary sensor signal which are provided to corresponding ones of the low-pass filters;

each low-pass filter comprises an accumulator configured to not assert the filtered sensor signal when a value in the accumulator is below a programmable threshold and to assert the filtered sensor signal when the value in the accumulator is above the threshold.

26. (New) The system of claim 2, wherein the at least one temperature sensor is selected from a group consisting of:

a thermal diode;

a temperature sensitive resistor; and

a temperature sensing integrated circuit.

27. (New) The system of claim 2, where during the compressing at least a portion of the audio signals:

a portion of the audio signals that is below a threshold value is amplified by a first level; and

a portion of the audio signals that is above the threshold is amplified by a second level that is below the first level but is greater than zero.

28. (New) The system of claim 13, where during the compressing at least a portion of the audio signals:

a portion of the audio signals that is below a threshold value is amplified by a first level; and

a portion of the audio signals that is above the threshold is amplified by a second level that is below the first level but is greater than zero.